What Is Claimed Is:

1 1. A pharmaceutical composition for regulating bone-forming activity in a

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- 2 mammal comprising at least one of (i) a secreted frizzled related protein (sFRP) or
- 3 regulating portion thereof (ii) an antibody against such proteins or portions thereof,
- 4 (iii) a nucleic acid that encodes for either (i) or (ii); (iv) an sFRP antisense nucleic
- 5 acid; or (v) a small molecule that has an effect on any of items (i)- (iv).
- 1 2. A pharmaceutical composition according to claim 1, wherein the sFRP is
- 2 from human osteoblast cells.
- 1 3. A pharmaceutical composition according to claim 1, wherein the bone
- 2 forming activity is the regulation of bone growth.
- 1 4. A pharmaceutical composition according to claim 1, wherein the bone
- 2 forming activity is regulation of bone density.
- 1 5. The pharmaceutical composition according to claim 1, wherein the sFRP is
- 2 sFRP-1.
- 1 6. The pharmaceutical composition of claim 1 wherein the composition
- 2 comprises an acceptable carrier or diluent.
- 1 7. A method for treating a bone disorder in a mammal comprising the steps of
- 2 administering a pharmaceutical composition as in claim 1.

1 8. The method of treating the bone disorder of claim 7, wherein the disorder

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- 2 comprises the group consisting of (a) a bone formation disorder, (b) a bone
- 3 resorption disorder, and (c) a bone density disorder.
- 1 9. The method of claim 7 wherein the bone disorder is a degenerative bone
- disorder.
- 1 10. The method of claim 9 wherein the degenerative bone disorder is an
- 2 osteodegeneration disorder.
- 1 11. The method of claim 10, wherein the osteodegeneration disorder is selected
- from the group consisting of osteopenia, osteoarthritis, osteoporosis.
- 1 12. The method of claim 7, wherein the mammal is a human.
- 1 13. A method for identifying a test compound that regulates sFRP activity, which
- 2 method comprises determining activity of sFRP incubated in a medium containing a
- test compound, wherein an increase in activity relative to sFRP alone indicates the
- 4 compound is an sFRP activator and a decrease in activity indicates the compound is
- 5 an sFRP inhibitor.
- 1 14. The method of claim 13 wherein the sample comprises an immortalized
- 2 human osteoblast cell that expresses a temperature-sensitive mutant of simian virus
- 3 40 large T protein antigen, wherein the cell proliferates at about 34° C but does not

- 4 proliferate at temperatures exceeding about 37°C, when the T-antigen mutant is
- 5 inactive.
- 1 15. The method of claim 14 wherein the immortalized human osteoblast cell is an
- 2 hOB-01-C1-PS-09 cell, as deposited with American Type Culture Collection in
- 3 Manassas, VA with the designation PTA-785, or progeny thereof.
- 1 16. A method of modulating Wnt-mediated signaling in a cell comprising
- 2 contacting the cell with the composition of claim 1, wherein the Wnt activity is
- 3 regulated.
- 1 17. The method of claim 16, wherein the sFRP of the composition is sFRP-1.
- 1 18. A method of facilitating bone formation or repair in a bone cell, comprising
- 2 introducing a recombinant construct expressing an antisense, siRNA, shRNA
- 3 sequence to a nucleotide sequence that encodes an sFRP-1 into bone cells.
- 1 19. A method of diagnosing a bone disease or disorder, the method comprising
- 2 using a polynucleotide probe capable of hybridizing with the polynucleotide having
- 3 the nucleic acid sequence set forth in SEQ ID NO: 1 to detect the presence or
- 4 absence of an sFRP in a sample derived from a mammalian host.

1 20. A pharmaceutical composition for regulating bone-forming activity in a

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- 2 mammal comprising at least one antibody to a secreted frizzled related protein
- 3 (sFRP) or regulating portion thereof.
- 1 21. The pharmaceutical composition of claim 20 wherein the composition
- 2 comprises an acceptable carrier or diluent.
- 1 22. The pharmaceutical composition of claim 20 wherein the antibody is raised
- 2 against at least 8 consecutive amino acids of an sFRP protein.
- 1 23. The pharmaceutical composition of claim 20 wherein the antibody is raised
- 2 against at least 10 consecutive amino acids of an sFRP protein.
- 1 24. The pharmaceutical composition of claim 20 wherein the antibody is raised
- against at least amino acids 217-231 of an sFRP protein of SEQ ID NO: 2.
- 1 25. The pharmaceutical composition as in claim 1, wherein the sFRP has the
- 2 amino acid sequence obtained by the expression of the polynucleotide sequence set
- forth in SEQ ID NO: 1.
- 1 26. A method for identifying a test compound that modulates sFRP activity,
- which method comprises comparing the phenotypic changes induced by the test
- 3 compound on a sFRP +/+ animal with the phenotypic changes induced by the test
- 4 compound on a sFRP -/- animal, wherein a phenotypic change in the sFRP +/+

5 animal relative to the sFRP -/- animal indicates the compound is a modulator of

- 6 sFRP activity.
- 1 27. An immortalized human osteoblast (hOB) cell that expresses a temperature-
- 2 sensitive mutant of simian virus 40 large T protein antigen, wherein the cell
- 3 proliferates at about 34 °C but does not proliferate at temperatures exceeding about
- 4 37 °C, when the T-antigen mutant is inactive.
- 1 28. An hOB cell of claim 27 that expresses a nucleotide sequence encoding a
- 2 polynucleotide that encodes an sFRP or fragment thereof.
- 1 29. An hOB cell of claim 27 wherein the hOB is an hOB-01-C1-PS-09 cell, as
- deposited with American Type Culture Collection in Manassas, VA with the
- designation PTA-785, or progeny thereof.
- 1 30. A homogenous population of cells comprising the hOB cell of claim 27.
- 1 31. A method for preventing a bone disorder in a mammal, which method
- 2 comprises administering a pharmaceutical composition as in claim 1.
- 1 32. The method of preventing a bone disorder according to claim 31, in which the
- disorder is a bone formation disorder, a bone resorption disorder or a bone density
- 3 disorder.

1 33. The method according to claim 31 in which the disorder is a degenerative

- 2 bone disorder.
- 1 34. The method according to claim 33 in which the degenerative bone disorder is
- 2 an osteodegeneration disorders.
- 1 35. The method according to claim 34 in which the osteodegeneration disorder
- 2 selected from the group consisting of osteopenia, osteoarthritis, and osteoporosis.
- 1 36. The method according to claim 35 in which the disorder is Type II
- 2 osteoporosis.
- 1 37. A method according to claim 31 in which the mammal is a human.
- 1 38. A method according to claim 31 in which the pharmaceutical composition
- 2 inhibits expression or activity of the sFRP in the mammal.
- 1 39. A method according to claim 38 in which the sFRP expression or activity is
- 2 inhibited by at least 20%.
- 1 40. A method according to claim 38 in which the sFRP expression or activity is
- 2 completely eliminated in the mammal.
- 1 41. A method according to claim 7 in which the pharmaceutical composition
- 2 inhibits expression or activity of the sFRP in the mammal.

- 1 42. A method according to claim 41 in which the sFRP expression or activity is
- 2 inhibited by at least 20%.
- 1 43. A method according to claim 41 in which the sFRP expression or activity is
- 2 completely eliminated in the mammal.